HIGHWAY STATISTICS

2011 WILMAPCO Congestion Management System (CMS)

The main goal of the Wilmington Area Planning Council's (WILMAPCO) Congestion Management System (CMS) report is a "systems" approach to identifying and addressing congestion in our region. With this approach, the existence of congestion in the transportation system can be seen in more of a regional (or national) context and it becomes apparent how slight changes at a specific location can impact the operation of the transportation system as a whole. The 2012 CMS uses a "Summary-Style" approach that has been designed to focus on the core functions of what a CMP is to perform. The goal was to create a more streamlined, data-oriented summary that serves as a resource for use in other Metropolitan Planning Organization (MPO) documents. The report has four key sections:

Section #1: Congestion Definition and Corridor Identification

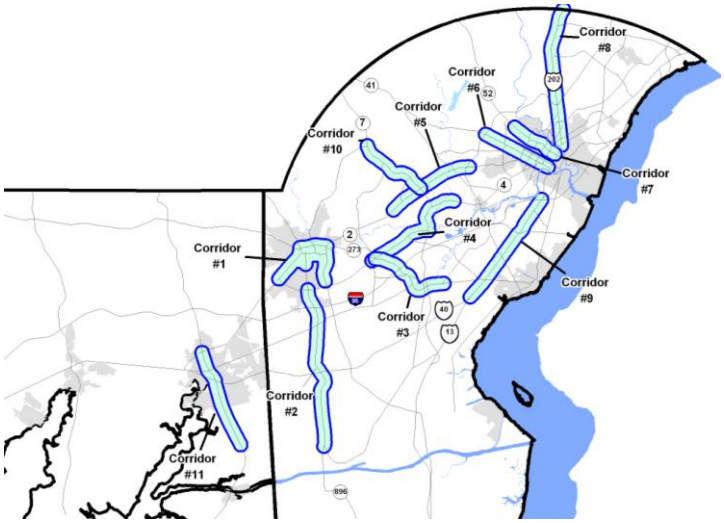
Congestion Definition

Due to constraints in data collection, the network has been limited to all roadways classified as Minor Arterial or greater according to the FHWA functional classification network. The CMS uses a series of performance measures to evaluate the current congestion level of our most traveled roadway network. Currently, performance measures used in the congestion identification analysis in this report is limited to roadway congestion due to reliable data constraints. Those measures used include:

- Intersection Level of Service (Delay-based)
- Roadway Travel Speeds vs. freeflow speed

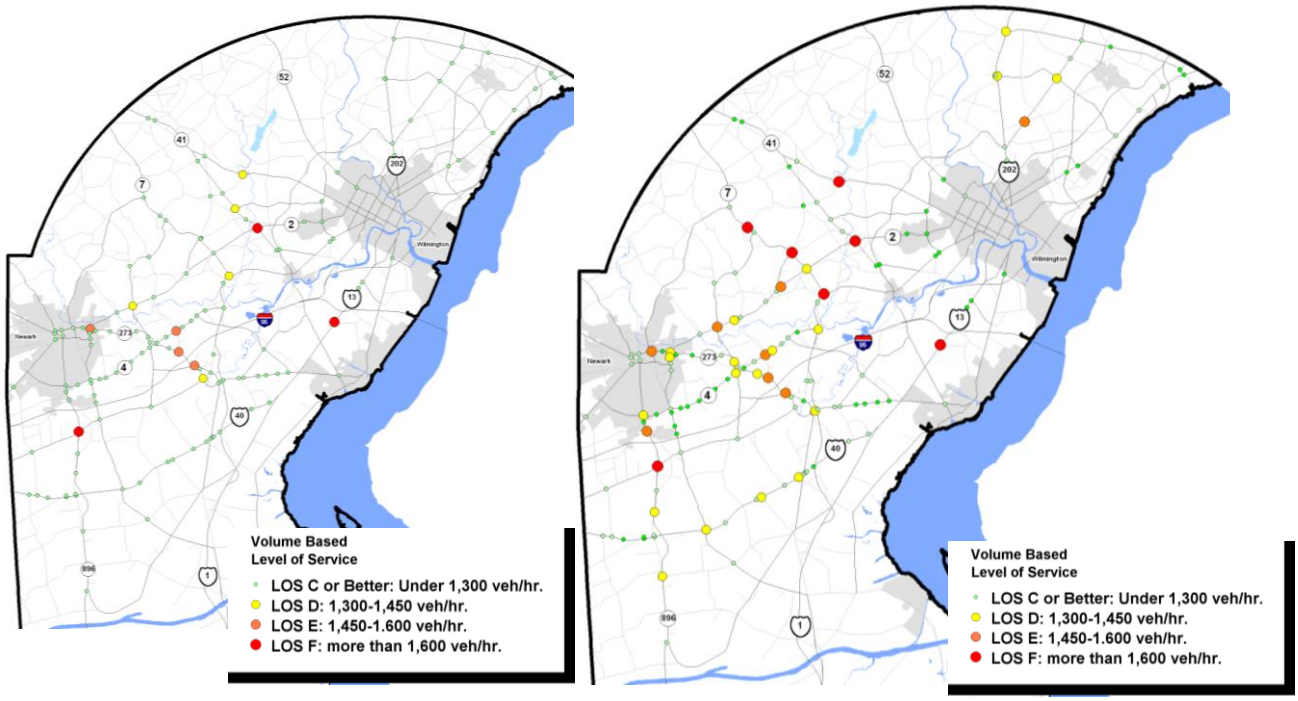
Corridor Identification

Using the above performance measures, the final step in the process is to delineate specific congested corridors. Members of the CMS Subcommittee identified these corridors with criteria that analyzed congestion density (number or frequency of adjacent congested segments and/or intersections) and predominant travel patterns.



SECTION 2: Intersection Operational Analysis— A new section in this year's document, it is a detailed analysis to determine if a deficient intersection is suffering from a signal timing issue or has it truly reached a level of volume in which it requires more physical, on-road improvements. This was developed to create a process which brings both the planning and operating communities together in developing cohesive solutions for congested corridors, this report has added a feature that not only looks at how intersections are performing through measures of delay, but also by the measurement of vehicle throughput of each. In order to accomplish this, a capacity analysis using the Critical Movement Summation method to determine level of service. This method focuses on "raw" intersection capacity, that is, the ability for an intersection to process a given traffic demand with a given lane use configuration and given phase sequence.

Volume-Based Intersection Level of Service – Intersection Operational Analysis



The purpose of this is to be able to determine whether a deficient intersection is suffering from a signal timing issue or has it truly reached a level of volume in which it requires capital improvements. While other demand-reducing efforts will still be explored, this effort will help determine more specific capital improvements that are needed to provide an acceptable LOS and provide more efficient traffic flows for commuters and bus transit services., Results of this effort can be used to provide a performance-based analysis to provide a prioritized list of needed improvement into the statewide project pipeline. The results are a three-tiered prioritization of intersections which were shown to have poor LOS in the delay-based analysis, but may have shown to have enough capacity allow for less costly solutions or need reductions in demand through the peak hour.

Summary of Intersection LOS Comparisons from a "Delay-Based LOS" and the "Capacity-Based LOS"

Intersection	Notes
SR 2 & Cleveland Ave.	**Intersections are showing either AM/PM LOS of "E" of "F" using both LOS methods. For improving LOS, these intersections will require significant reductions in demand through the intersetcion and/or capital improvements.**
Cleveland Ave. & Paper Mill Rd./ N. Chapel St.	
Foulk Rd. & Murphy Rd.	
SR 896 & Welsh Tract Rd.	
SR 273 & Harmony Rd.	
SR 273 & Chapman Rd (Eagle Run)	
SR 2 & Milltown Rd.	
SR 7 & Milltown Rd.	
SR 7 & Skyline Dr.	
SR 48 & Hercules Rd.	
SR 7 (Limestone Rd) & SR 4 (Main St.) Stanton	
SR 2 & SR 41	
SR 896 & Old Baltiomore Pk.	
US 13 & Bacon Ave/Boulden Blvd.	
SR 41 & Faulkland Rd.	**Intersections are bordering on a deficient level of service if traffic growth continues. While not immediately needed, some modest improvements can be made.**
SR 273 & Old Balt. Pike	
US 202 & Silverside Rd.	
SR 261 (Foulk Rd.) & Silverside Rd.	
SR 4 & Salem Church Rd.	
SR 4 & Samoset Dr.	
SR 896 (Glasgow Ave.E) & Porter Rd.	
SR 896 (S. College Ave.) & Corporate Blvd. (GBC DR)	
SR 273 & Main St.	
SR 273 & Old Ogletown Rd./Paradise Ln.	
SR 2 (Kirkwood Hwy) & SR 7 (Limestone Rd.)	
SR 273 & Brownleaf Dr.	
SR 2 & SR 100	**Intersections which can function at LOS "C" or better through proper signal timing / phasing. No significant capital improvements are needed unless traffic conditions change significantly.**
Milltown Rd. &Mc Kennans Church Rd.	
SR 273 &Marrows Rd.	
SR 273 & Lowes Entrance	
New Castle Ave. & Terminal Ave.	
US 13 & Boyds Corner Rd.	
SR 273 & Churchmans Rd.	
SR 273 & White Clay Center Dr.	
Foulk Rd. & Grubb Rd.	
SR 896 & Hillside Rd.	
SR 7 & SR 72	
US 202 (SB) & Garden of Eden Rd.	
SR 7 & Linden Hill Rd.	
SR 273 & Appleby Rd.	
US 202 & Foulk Rd.	
SR 273 (W. Main St.) & Hillside Rd.	
SR 92 / Naamans Rd. & Foulk Rd.	
SR 72 & E Delaware Ave	
SR 4 & Churchman's Rd.	
PENNSYLVANIA AVE & UNION ST	
SR 2 & Possum Park Rd.	
SR 896 & Four Seasons Parkway	
LInden Hill Rd. & Polly Drummond Rd.	
SR 273 & Airport Rd.	
SR 7 & SR 273	
SR 273 & Browns Lane	
SR 72 & Old Balt. Pike	

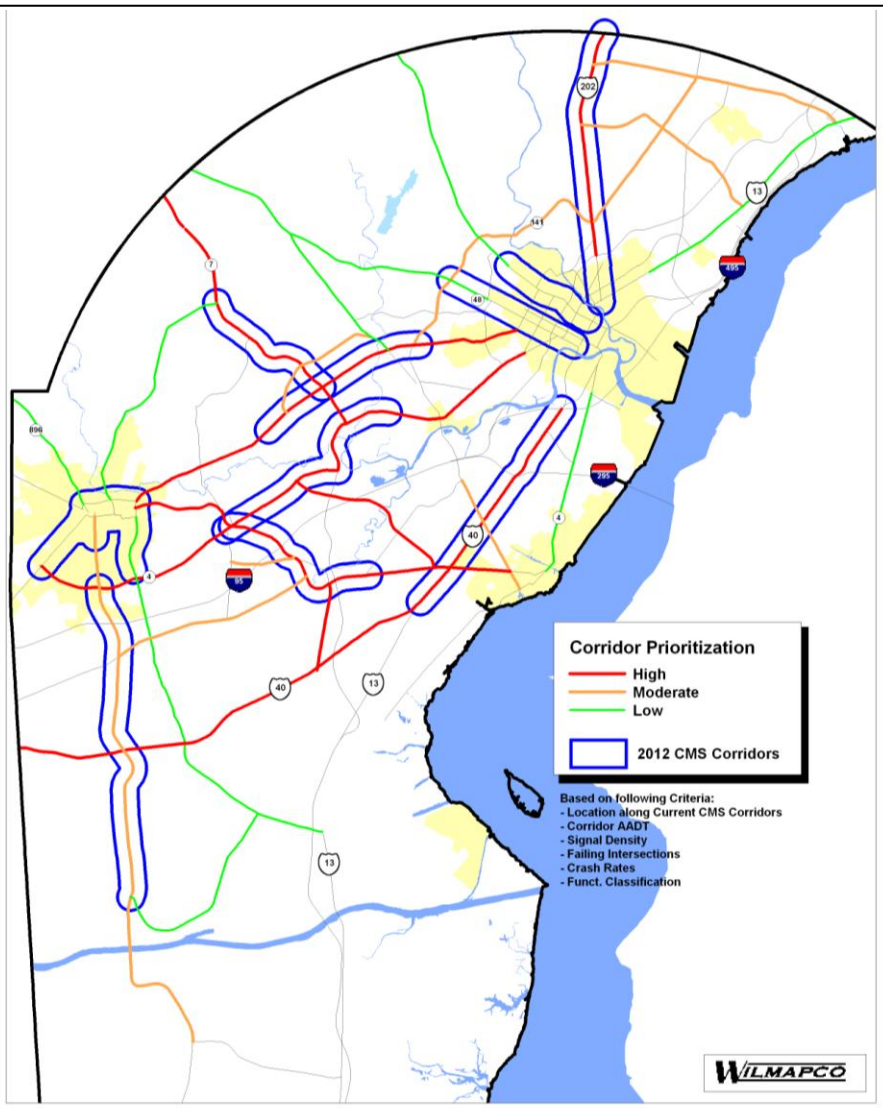
Coordination with DelDOT TMC

Through coordination with the DelDOT TMC and WILMAPCO, an effort was made to use the performance measures developed through the corridor identification process to help the operations community use this analysis to prioritize their efforts for address the corridors which are in need of installing Traffic Responsive Signalization (TRS).

Traffic responsive signalization is a method of signal timing that adjusts to the current traffic volume. The signals used in this method optimize signal timing according to traffic volume in each direction. Sensors are used to detect vehicular traffic in a certain direction at a particular point and an algorithm is used to predict when and where the traffic will be. The signal controller utilizes these algorithms to adjust the length of green time to allow the maximum amount of vehicles through the intersection. This method can react to fluctuating traffic volume in order to reduce congestion.

Many of the TRS candidate corridors correlate very well with the identified 2012 CMS corridors. As a strategy to mitigate congestion, these represent which ones should be studied further for implementation.

Priority Corridors for Traffic Responsive Signalization (TRS) Implementation



Section 3: Strategy Evaluation

Potential strategies to reduce congestion have been assembled in a "toolbox" designed to provide the appropriate solutions for each corridor. Within each of these strategies, specific mitigation measures are outlined and described in detail. This package of solutions to congestion includes measures involving all modes of transportation as well as encouraging more efficient patterns of land use and development.

WILMAPCO CMS "TOOLBOX" STRATEGIES:

Strategy #1: Eliminate person trips or reduce VMT during peak hours
Strategy #2: Shift Trips from Automobile to Other Modes
Strategy #3: Shift Trips from SOV to HOV Auto/Van
Strategy #4: Improve Roadway Operations
Strategy #5: Add Capacity

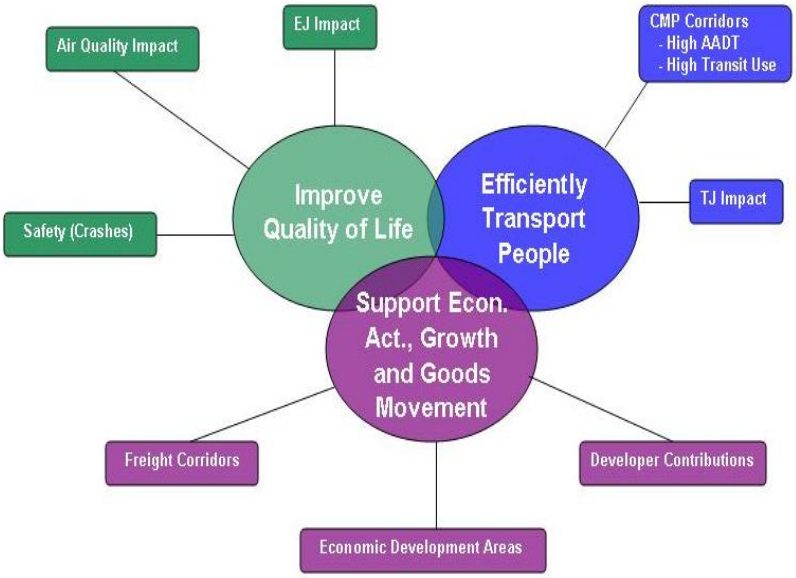
A key component in WILMAPCO's "top-down" approach ensures that solutions which would eliminate or shift auto trips or improve roadway operations are evaluated before adding roadway capacity.

The WILMAPCO CMS and the Project Prioritization Process

Spurred by a plethora of unfunded transportation projects in our 2030 Regional Transportation Plan (RTP) and the desire for more transparency in project selection, WILMAPCO developed a technical process to score, and ultimately help rank projects for funding. Known as the "Project Prioritization Process," transportation projects are scored against criteria tied to the overall goals of our RTP: Improve Quality of Life; Transport People and Goods; and Support Economic Growth and Activity.

As shown in the image below, measures such as a project's impact on air quality, sensitive neighborhoods (Environmental and Transportation Justice), or location along a freight route are considered. Projects receive points if they support these criteria, or can have points deducted if they do not. For example, a major commuter rail project would receive the maximum of three possible points for air quality, as it would promise to reduce automobile emissions. By contrast, an interstate interchange project located in a low-income/minority neighborhood would receive the maximum of three negative points for Environmental Justice, as it would introduce noise, pollution and traffic into the community.

WILMAPCO Project Prioritization Process & Criteria



A project's presence within an identified CMS corridor can boost its score greatly. Projects within a CMS corridor automatically receive two points. They are then qualified to receive up to four points if the traffic volumes are high and up to three points if the capacity of the location's fixed-route transit service is too. With nine points out of a possible 33, CMS is the single most heavily-weighted factor in the prioritization process.

After technical scores are calculated, qualitative considerations may be introduced to adjust a project's final ranking. These include the urgency of the project, or its cost-effectiveness. For a more detailed overview of the WILMAPCO Prioritization Process with full point breakdowns, please visit: www.wilmapco.org/RTP .

Putting the scoring system into practice, the table below lists the technical scores of projects in the FY2013-2017 Transportation Improvement Program (TIP) which fell within a CMS corridor. The TIP is a four-year funding program with over $1.2 billion in transportation projects. Below is a breakdown of the congestion-based scoring criteria used in the adopted WILMAPCO prioritization process.

2013-17 TIP Projects Based on CMS Criteria from the WILMAPCO Prioritization Process

PROJECT	WILMAPCO Category	CMS Corridor	CMS ADT	CMS Transit	Total
I-95 & SR 141 Interchange	System Management	2	4	3	9
Rail: Newark to Wilmington Track Expansion	System Expansion	2	4	3	9
SR 2: S. Union Street	System Management	2	2	3	7
Transit Vehicle Replacement and Refurbishment, New Castle County	System Preservation	2	2	3	7
Wilmington DART Bus Hub		2	2	2	6
SR 1, Tybouts Corner to SR 273	System Expansion	1	4	0	5
Rail Improvements: Fairplay Station Parking		2	0	3	5
SR 2, Elkton Rd., Maryland State Line to Casho Mill Rd.	System Management	2	2	0	4
US 301: MD Line - SR 1, and Spur	System Expansion	2	2	0	4
Transit Vehicle Expansion, NCC	System Expansion	1	2	1	4
City of New Castle: SR 9/Delaware St./Harmony St.	System Management	1	0	2	3
City of New Castle: SR9/6th St/3rd St.	System Management	1	0	2	3
Tyler McConnell Bridge, SR141: Montchanin Rd. to Alapocas Rd.	System Expansion	1	2	0	3
Wilmington Riverfront: Christina River Bridge	System Expansion	1	0	2	3
Road A /SR 7		2	0	1	3
Southern New Castle County Improvements: Boyd's Corner Rd.: Cedar Ln - US 13	System Management	1	2	0	3
Transit Vehicle Expansion: SR 141	System Expansion	1	2	0	3
Rail: Newark Regional Transit Center (Newark Train Station)	System Expansion	2	0	1	3
US 40: US 40/SR 72 Intersection, including Del Laws Rd.	System Management	1	0	1	2

Section #3: System Monitoring

The fourth and final step in the development of the CMS, the task of monitoring the system, tracks the effectiveness of the CMS recommendations over time and allows us to see where new problems might arise. This section displays series of data analyses designed to help decision makers get a sense of the changing conditions of our region and their impact on our network. Analysis in this section includes:

- Programmed Projects along identified CMS corridors
- Crash Analysis & Trends
- Crash Analysis– Roadway Segments
- Crash Analysis—Intersections
- Impact of Freight on the CMS Network
- Mean Peak Travel Speed Changes
- Traffic Volume Changes

Section #4; Congestion Mitigation Activities

The following section is designed to chronicle the effectiveness of some of the congestion mitigation strategies discussed in the strategy evaluation section of this document. This is now possible as a result of the numerous data collection efforts performed by WILMAPCO and its member agencies. With a well established base of annual data, the ability to see trends that have developed. The analysis in this section gives some insight on the linkage between where certain congestion mitigation measures are more effective than others.

- Transit Performance
- Non-Motorized Facilities
- Intelligent Transportation Systems (ITS)
- Park & Ride / Park & Pool Lot Inventory
- Transportation Management Activities

WILMAPCO CMS Subcommittee

The CMS is developed by the WILMAPCO Congestion Management Subcommittee and assembled by WILMAPCO staff. WILMAPCO staff coordinates with all agencies of the subcommittee for various activities regarding the report such as data collection, review of performance measures and review of potential congestion mitigation strategies. Currently the subcommittee consists of members from DelDOT, Maryland State Highway Administration (MDSHA), Delaware Transit Corporation (DTC), New Castle County Land Use Department, City of Wilmington, TMA Delaware, Maryland Department of Planning, Delaware Office of State Planning Coordination and a member of the WILMAPCO Public Advisory Committee.

For more information regarding the CMS or to download the latest version, visit http://www.wilmapco.org/cms

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